Volume 21: 147–151
Publication date: 15 August 2018
dx.doi.org/10.7751/telopea12579

TELOPEA
Journal of Plant Systematics

The Royal Botanic Gardens & Domain Trust

plantnet.rbgsyd.nsw.gov.au/Telopea • escholarship.usyd.edu.au/journals/index.php/TEL • ISSN 0312-9764 (Print) • ISSN 2200-4025 (Online)

Pendressia, nom. nov. (Monimiaceae), a new generic name for *Wilkiea wardellii* from north-east Queensland.

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Abstract

The new generic name *Pendressia* Whiffin is proposed to replace the name *Endressia* Whiffin (Monimiaceae) which is illegitimate, being a later homonym of *Endressia* J.Gay (Apiaceae). The new combination *Pendressia wardellii* (F.Muell.) Whiffin is proposed for *Wilkiea wardellii*, and descriptions of both the genus and species are provided. The distinctiveness and relationships of *Pendressia* are discussed, and notes on habitat and distribution of the species are provided.

Introduction

Monimiaceae is a pantropical family mostly consisting of rainforest trees and shrubs, with about 28 genera and 200 species worldwide (Renner *et al.* 2010). The biogeographical and historical significance of the Monimiaceae is well documented. In Australia, Monimiaceae is more or less continuously represented along the eastern seaboard in areas of various rainforest formations, from Cape York Peninsula to Tasmania. Australia is a centre of both species (28) and generic (8) diversity (Whiffin and Foreman 2007), with the Wet Tropics in north-east Queensland regarded as being the most species rich region (8 genera and 23 species) (Metcalfe and Ford 2009).

Whiffin (2007) proposed the genus name *Endressia* Whiffin to accommodate the highly distinct species *Wilkiea wardellii* (F.Muell.) J.R.Perkins. However, the name *Endressia* Whiffin is illegitimate, being a later homonym of *Endressia* J.Gay (Apiaceae). Hence a new generic name is required, and a new combination to accommodate *Wilkiea wardellii* is also required.

Taxonomy

Pendressia Whiffin, ***nom. nov.***

Replaced synonym: *Endressia* Whiffin, *Fl. Australia* 2: 454 (2007), *nom. illeg., non Endressia* J.Gay, *Ann. Sci. Nat. (Paris)* 26: 223 (1832)

Tree, probably monoecious. Leaves crenate, slightly fleshy or subcoriaceous. Inflorescences terminal or axillary, cymes (botryoid, *sensu* Staedler and Endress 2009) or panicles (thyrsoid), of few (female) or many (male) flowers. Male flowers globose to clavate; tepals 4 around a small ostiole; stamens numerous, scattered on lower

and side walls of the receptacle; anthers deltoid (triangular), dehiscing by a single apical slit curving over the stamen apex; connective not prolonged into an appendage; filaments very short, glabrous; anthers more or less sessile. Female flowers poorly known, calyptrate at maturity, apparently without a hyperstigma; carpels relatively few, the ovary glabrous. Upper part of fruiting receptacle falling off forming a circular scar. Fruit a cluster of fleshy single-seeded stipitate drupes. Germination hypogeal.

A monotypic genus, restricted to the mountain rainforests of north-east Queensland.

Type species: *Pendressia wardellii* (F.Muell.) Whiffin

Etymology: To honour the original intent of naming this genus after Peter K. Endress (1942–), "in recognition of his contributions to the morphology and systematics of primitive angiosperms" (Whiffin 2007 p. 454).

Pendressia wardellii* (F.Muell.) Whiffin, *comb. nov.

Mollinedia wardellii F.Muell., *Fragm.* 5(38): 155 (1866); *Wilkiea wardellii* (F.Muell.) J.R.Perkins, *Bot. Jahrb. Syst.* 25(4): 570 t. VI e, 1–4 (1898); *Endressia wardellii* (F.Muell.) Whiffin, *Fl. Australia* 2: 454 (2007), *nom. illeg.*

Type: Coast Range, Qld, 17 Nov. 1865, *J.Dallachy s.n.;* lecto: MEL 2050659, *fide* Whiffin, *Fl. Australia* 2: 454 (2007).

Wardellia paniculata F.Muell., *Fragm.* 5: 155 (1866), *nom. inval., pro syn.*

Wilkiea sp. (=RFK/3350), B.Hyland and T.Whiffin, *Australian Tropical Rainforest Trees* (1993).

Wilkiea paniculata Whiffin, *Fl. Australia* 2: 88 (2007), *nom. inval., pro syn.*

Tall shrub to small tree 4–20 m tall, stem diameters to 20cm. Leaves: petioles pink-red when fresh, 8–13 mm long; lamina ovate, elliptic to obovate, 4–13 cm long, 2–6 cm wide, apex acute to obtuse, base attenuate to cuneate, margin crenate; midrib prominent on both surfaces, flattened to slightly raised adaxially, raised and prominent abaxially. Male inflorescences 3–7 (–10) cm long, highly branched, with numerous flowers, glabrous. Male flowers globose to clavate, *c.* 3 mm diam.; tepals as 2 pairs; stamens 10–15, scattered over the lower and side walls of the receptacle. Female inflorescence 1–4 cm long, few-flowered, glabrous. Female flowers globose; carpels 8–10. Flowering receptacle yellow to pale orange. Drupes globose to ellipsoid, 10–15 mm long, 10–12 mm wide, red. Specific wood density 532 kg/m^3. **Fig. 1.**

Distribution: Endemic to the Wet Tropics bioregion (Department of the Environment 2012) in north-eastern Queensland, Australia, where it is currently known from the Windsor Tableland (south of Cooktown) to the Kirrama Range (west of Cardwell) (**Fig. 2**).

Habitat: This species is recorded from mountainous ranges in high rainfall areas within notophyll to notophyll-microphyll vine-forests/rainforests on soils commonly derived from granite or rhyolite. Common canopy species throughout most of its range include: *Acmena resa, Balanops australiana*, *Ceratopetalum succirubrum, Cryptocarya lividula, Cryptocarya grandis, Elaeocarpus ferruginiflorus, Elaeocarpus hylobroma*, *Garcinia zichii*, *Halfordia kendack, Niemeyera* sp. Mt Lewis (A.K.Irvine 1402), *Planchonella euphlebia, Syzygium endophloium* and *Syzygium wesa.* Common small trees and shrubs include: *Apodytes brachystylis*, *Bobea myrtoides, Chionanthus axillaris*, *Psychotria* spp., *Steganthera macooraia* and *Wilkiea angustifolia*. Altitudinal range from 740–1520 m.

Generic relationships

The relationships of *Pendressia* are not entirely clear. The sole species, *P. wardellii*, had been placed in the genus *Wilkiea* F.Muell., and it shares with that genus (and with *Kibara* Endl.) the form of the stamens in the male flower. These have short to long filaments, with triangular (deltoid) anthers, dehiscing by a single apical slit curving over the stamen apex. However, in *Wilkiea* (and in Australian species referred previously to *Kibara*) the stamens are usually 4 to 8 arranged in pairs on the floor and lower walls of the receptacle. Only in *W. austroqueenslandica* Domin are there more numerous stamens (up to 30), with these being arranged in vertical rows over the lower and side walls of the receptacle. In contrast, *P. wardellii* has numerous stamens (10 to 15) scattered over the lower and side walls of the receptacle. In addition, the female flowers in *Wilkiea* (and *Kibara*) have a hyperstigma, where the inner whorls of tepals are thickened and glandular (Endress 1980), forming a receptive region for pollen, whereas there appears to be no hyperstigma in *Pendressia*, although information on the female flowers is sparse. *Pendressia wardellii* can be distinguished in the field by the highly branched inflorescences (especially the male inflorescences) and the red fruit. *Wilkiea* tends to have smaller, and often fasciculate, inflorescences, and the drupes are black at maturity.

Fig. 1. *Pendressia wardellii* fruiting branchlet with mature and immature fruit. Note the pink-red leaf petioles (*Ford 4303*). Copyright CSIRO Andrew Ford.

Renner *et al.* (2010) placed *Pendressia wardellii* (as '*Endressia wardellii*') in a distinct subclade with two other Wet Tropics endemics (*Austromatthaea elegans* L.S.Sm. and *Hemmantia webbii* Whiffin) within Clade V '*Steganthera* and allies' and closest to *Hemmantia*. However, *Pendressia* is distinct morphologically from these two taxa (Whiffin and Foreman 2007). In *Pendressia* the stamens in the male flowers have anthers which dehisce by a single slit, while in the other two genera the anthers dehisce by two lateral slits. In addition, the three genera differ in the number of stamens, with *Pendressia* having 10 to 15, *Austromatthaea* 25 to 40, and *Hemmantia* two only. They also differ in the number of carpels in the female flowers, with *Pendressia* having 8 to 10 and *Austromatthaea* having more than 100; the female flowers are unknown in *Hemmantia*. Whilst *Austromatthaea* and *Hemmantia* are superficially similar to one another, *Pendressia* is unique in habit, leaf form, inflorescence, and in floral details. *Pendressia* and *Austromatthaea* do share one feature in common and differing from all other Australian Monimiaceae studied. These two taxa (plus *Wilkiea* sp. McDowall Range (JGT 14552)), whose relationship to *Wilkiea s.str* is unclear) differ from all other north Queensland species examined in having hypogeal rather than epigeal germination (Hyland *et al.* 2003; Whiffin and Foreman 2007).

In a numerical analysis of the leaf volatile oils of Australian Monimiaceae, Whiffin (unpubl.) showed that *P. wardellii*, *A. elegans* and *H. webbii* were distinct from each other and from all other genera. Identification of the major compounds in the leaf volatile oils confirmed the distinctiveness of *P. wardellii* (Brophy *et al.* 2009) and *A. elegans* (Brophy *et al.* 1995); *H. webbii* has not been studied in this respect.

Acknowledgements

We warmly thank Peter Endress for bringing the original discrepancy to our attention, Brendan Lepschi who made valuable nomenclatural corrections, and Hervé Sauquet along with an anonymous reviewer who improved an earlier version.

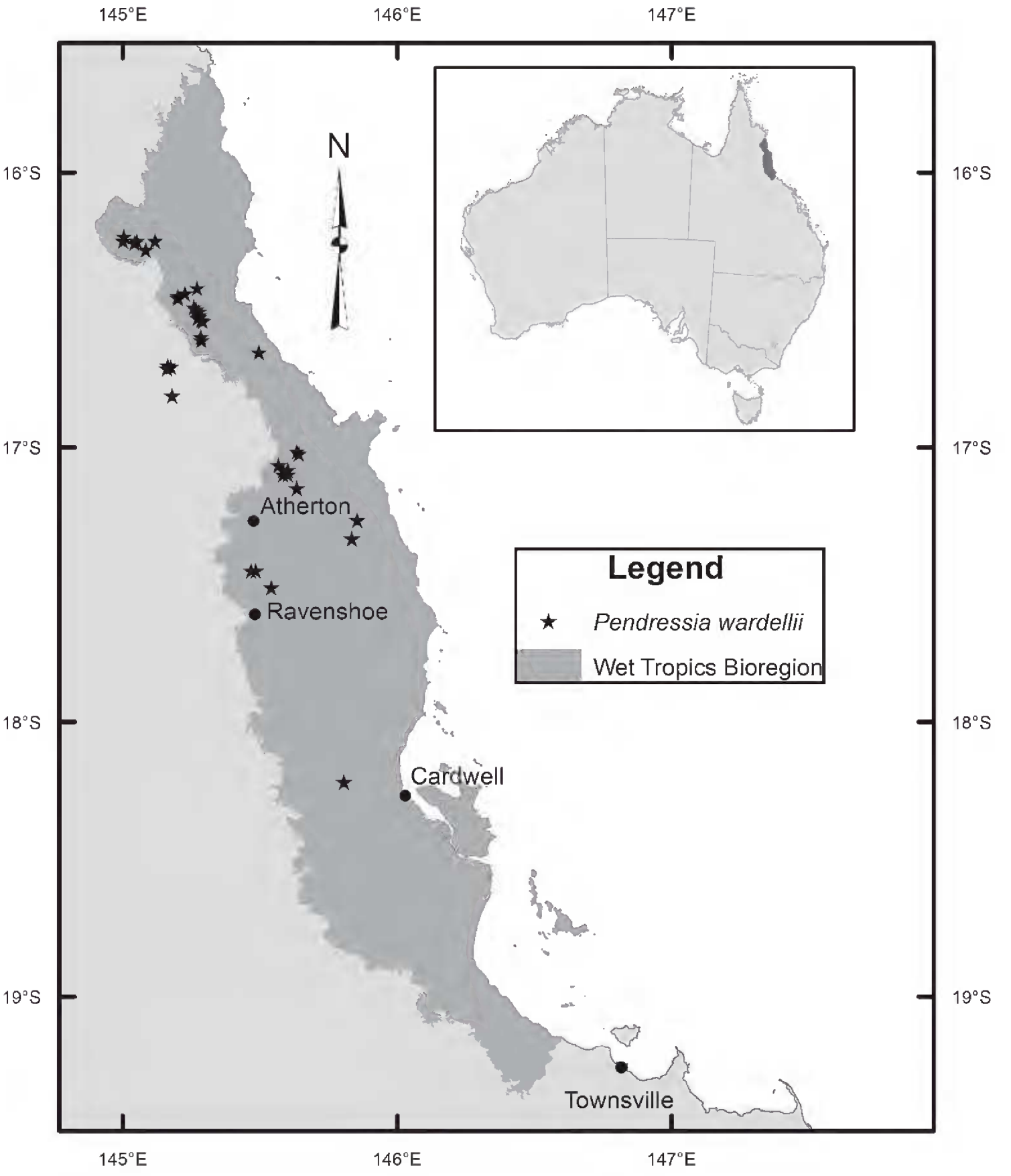

Fig. 2. Distribution of *Pendressia wardellii* in north-east Queensland.

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Manuscript received 4 June 2018, accepted 9 July 2018